

No. 774,483.

PATENTED NOV. 8, 1904.

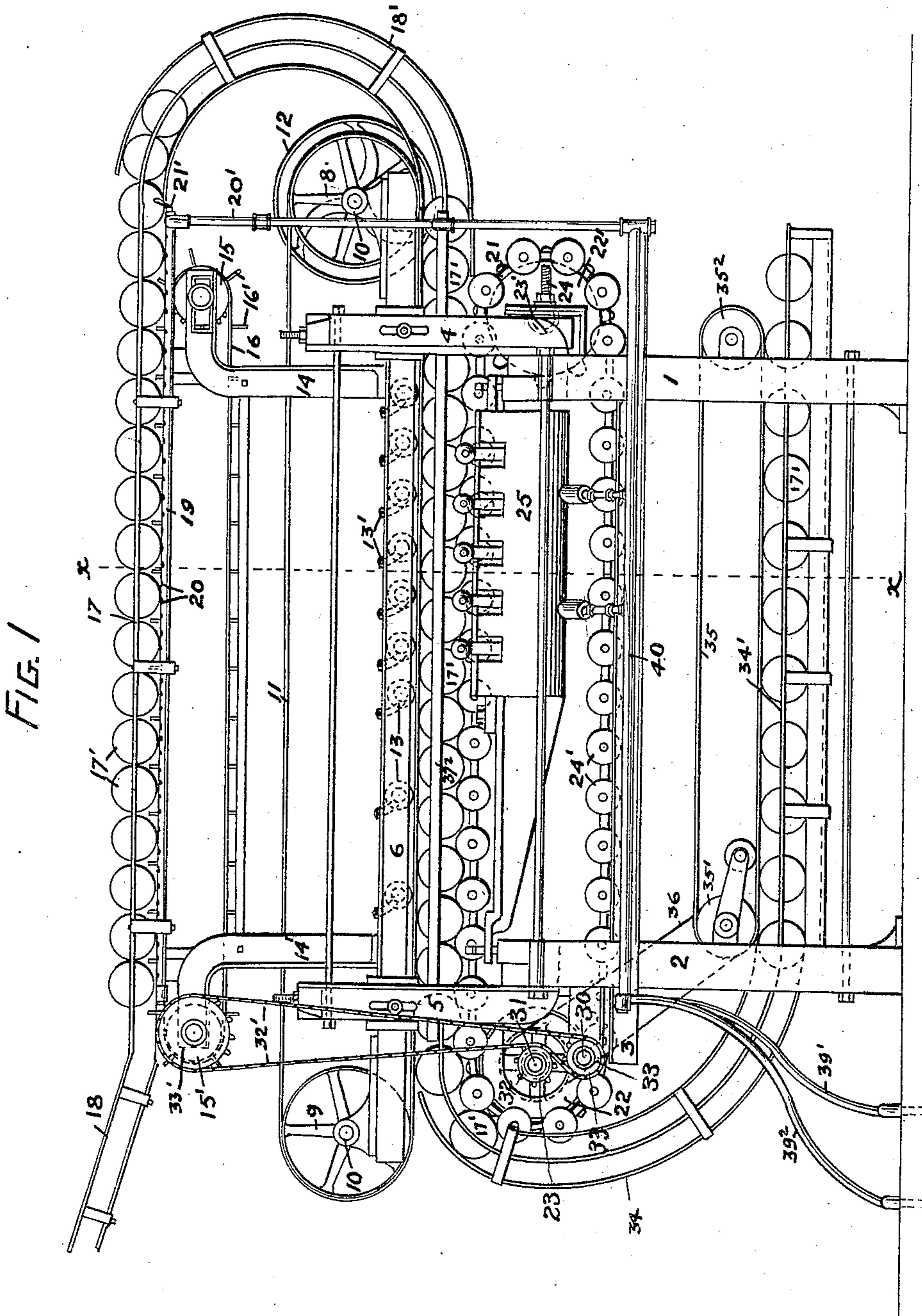
A. LOTZ.

CAN END SOLDERING MACHINE.

APPLICATION FILED OCT. 17, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:  
Halter & Vane,  
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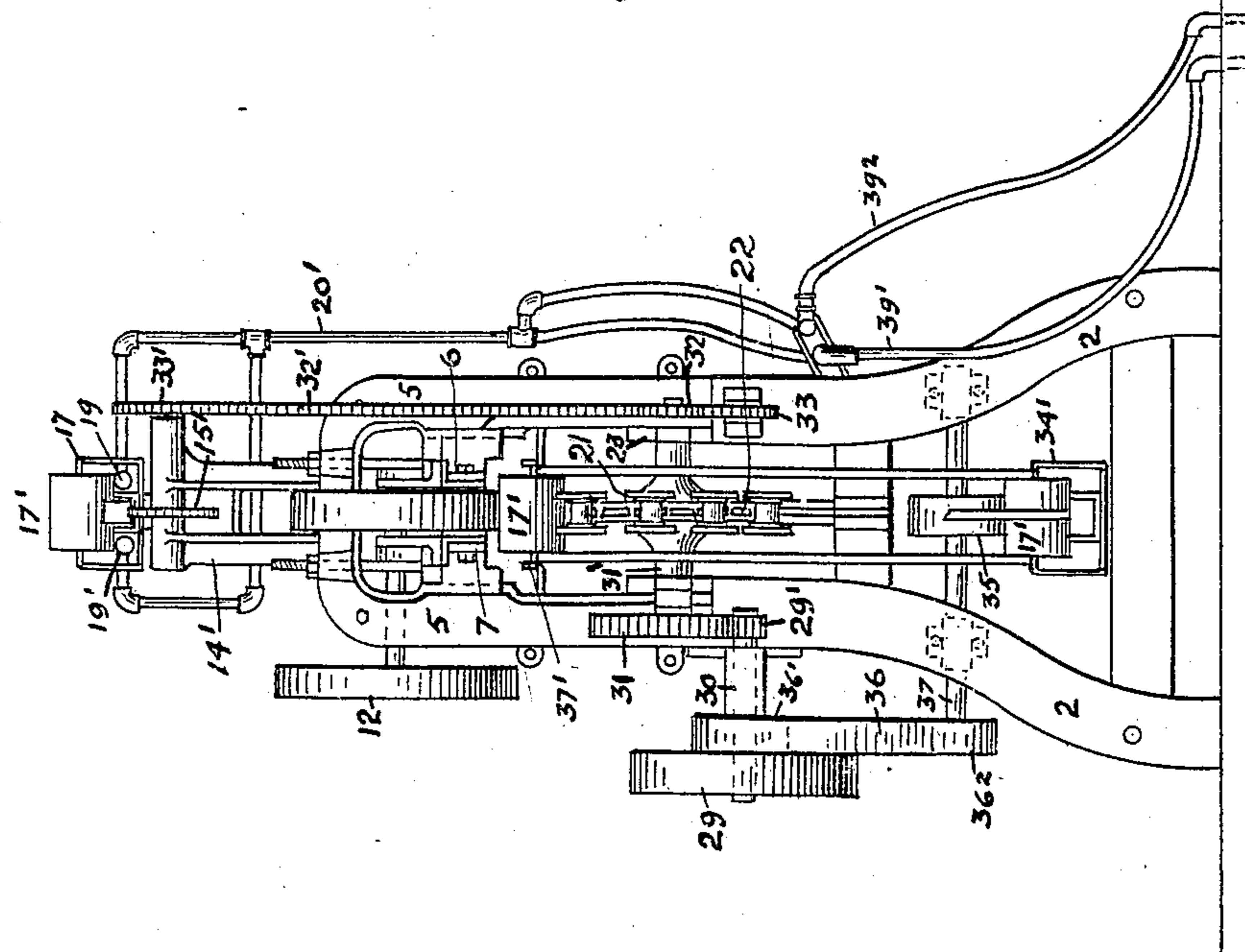
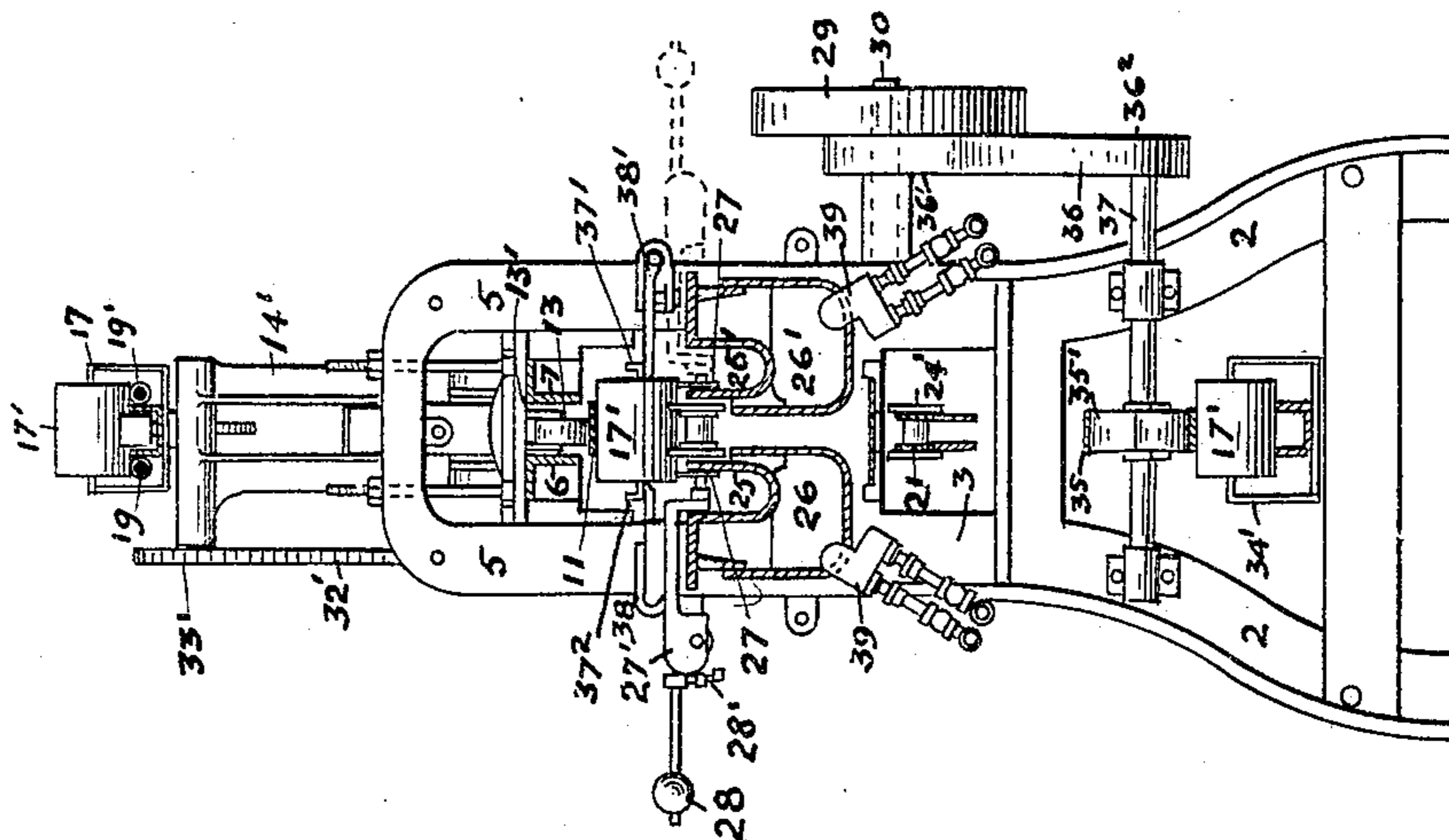
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CAN END SOLDERING MACHINE.

APPLICATION FILED OCT. 17, 1902.

NO MODEL.

2 SHEETS--SHEET 2.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

AUGUSTUS LOTZ, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO AMERICAN CAN COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF NEW JERSEY.

## CAN-END-SOLDERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 774,483, dated November 8, 1904.

Application filed October 17, 1902. Serial No. 127,622. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUSTUS LOTZ, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Can-End-Soldering Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

10 The present invention relates to that class of can-soldering machines known as "end-solderers," or such as solder the ends or heads onto the ends of the body, the object of the invention being the production of a machine  
15 by the use of which the solder required to unite the heads onto the can-body will be reduced to a minimum, thereby lessening the cost of manufacturing cans, also to provide a machine which will permit of the cans being  
20 handled with rapidity.

To comprehend the invention, reference should be had to the accompanying sheets of drawings, wherein—

25 Figure 1 is a side view in elevation of the entire machine. Fig. 2 is an end view in elevation viewed from the feed end of the machine, the can-conveyer belt, the can-feed runway, and the discharge-runway being broken away. Fig. 3 is a vertical sectional end view  
30 on line *xx*, Fig. 1, viewed from the discharge end of the machine.

In the drawings the numerals 1 2 are used to indicate the end pieces of the machine, which are united by suitable connecting side  
35 pieces 3. However, any desired form of supporting-frame may be employed.

To the brackets 4 5 are adjustably connected the supporting-plates 6 7, between which plates are mounted the rolls 8 9, working in the bearings 10 of the plates 6 7. Over these  
40 rolls work the endless can-conveying belt 11, which belt shall hereinafter be referred to as the "feed-belt." This feed-belt is driven by any suitable mechanism, preferably by means  
45 of a power-belt working over the belt-wheel 12, secured to axle of the roll 8. The under-run of the feed-belt is held downward by means of a series of weight-rolls 13, each of

which is secured to an arm 13', hinged to the parallel plates 6 7. 50

From the plates 6 7 upwardly extend the supporting-brackets 14 14', between which are mounted the conveyer-rolls 15 15'. These rolls drive the endless conveyer-belt 16, which works thereover. The conveyer-belt is provided with a series of projecting fingers or studs 16', which extend within the can-runway 17, and during movement of the conveyer-belt cause travel of the cans therein. The cans 17' are received from the inclined  
60 portion 18 of the runway 17 onto the conveyer-belt 16, resting between the fingers or studs 16', by means of which the cans are conveyed toward and discharged into the downwardly-curved extension 18' of the runway  
65 17 for delivery onto the hereinafter-described endless carrier.

As the cans are carried through the runway 17 the ends thereof are heated, so as to better take up the solder as carried past the soldering mechanism. This heating of the can ends is obtained by subjecting each end of the cans, which project beyond the side edges of the endless conveyer 16, to the action of a heating device. In the present case the heating  
75 device consists of two pieces of piping 19 19', secured to the runway 17 immediately below and in line with the projecting ends of the cans, which pipes are provided with either a series of perforations or jet-tips 20 in the upper face thereof. Through these outlet-openings gas, admitted thereto from pipe 20', escapes, which when ignited forms a series of gas-jets. These jets bear or play against the ends of the cans passed through the runway  
85 17 and heat the same. The admission of gas to the pipes 19 19' is controlled by the valve 21', secured within pipe 20'. 80

A short distance below the endless feed-belt 11 is located an endless carrier 21, which works over sprocket-wheels 22 22', working in bearings 23 23' of the frame-pieces 3. Bearing 23' is slidable, so as to regulate the tension of carrier 21. This slide-bearing is adjusted by means of the adjusting-screw 24. A series of  
95 supporting-rolls 24' are secured to the endless

carrier 21, onto which roll the cans as delivered by the curved extension 18' of the runway 17. The endless carrier 21 works between the solder-holding receptacles 25 25', secured within the fire-boxes 26 26', attached to the side pieces 3. Within the solder-holding receptacles 25 25' are arranged a series of solder-applying disks 27. These disks are rotatably secured to the inner end of the fulcrumed levers 27', to the outer end of which levers the weights 28 are adjustably secured. By sliding the weights 28 inward or outward upon the levers 27' the tension of the solder-applying disk against the surface of the can-bodies is regulated. By means of the adjusting or set screws 28' the downward movement of the outer end portion of the levers 27' is controlled, so that the inner end of said levers carrying the solder-applying disks cannot move beyond a given distance upward. (See Fig. 3 of the drawings.) The solder-applying-disks turn freely within the solder-baths, the position thereof being so arranged as to place the upper edge of each disk in line with that of the rolls 24'. These solder-applying disks as the cans are carried through the machine by the action of the endless carrier and endless feed-belt bear against the ends of the can-bodies, so as to apply solder thereto at the joint made by the flange of the can heads or ends. It will be understood that the rotation of the solder-applying disks is dependent upon the rotation of the cans carried between the endless carrier and the endless feed-belt.

Motion is imparted to the endless carrier 21 from the drive-pulley 29 by means of the pinion 29', secured to the drive-shaft 30, meshing with the gear 31, attached to one end of the axle 31' for the sprocket-wheel 22, Fig. 2 of the drawings. To the opposite end of the axle 31' is attached a sprocket 32, which engages with the sprocket-chain 32' in order to impart motion thereto for the purpose of driving the endless conveyer 16. This sprocket-chain works over the sprocket-pinion 33, secured to the frame of the machine, and the sprocket-gear 33', attached to one end of the axle of roll 15, over which the endless conveyer works. By thus connecting the parts an opposite travel is imparted to the endless conveyer to that given the endless carrier.

In order to impart rotation to the cans as propelled by the endless carrier and through, so to speak, the "solder-baths," the feed-belt 11, which bears upon the cans, is driven at a higher rate of speed than the endless carrier 21, causing the cans to revolve, although held against longitudinal movement by being seated between the rolls 24'. These rolls, while supporting the cans and holding the same against longitudinal movement, reduce friction incident to the rotation of the cans. By thus rotating the cans the entire circumference thereof is exposed to the action of the soldering mechanism, while at the same time the molten

solder is prevented from dripping therefrom during the cooling of the soldered ends.

Any suitable means may be employed for receiving the soldered cans as delivered from the carrier 21. Preferably the soldered cans are delivered into the curved end 34 of the discharge-runway 34', through which the cans are conveyed by the endless belt 35. This belt works over the rolls 35' 35<sup>2</sup>, being driven by the belt 36, working over the belt-wheel 36', secured to the drive-shaft 30, and the belt-wheel 36<sup>2</sup>, secured to one end of the axle 37 for the roll 35'.

To prevent end slippage of the cans during travel between the feed-belt 11 and the endless carrier 24', the guide-bars 37' 37<sup>2</sup> are provided. These bars are secured to the arms 38 38', hinged to the frame end pieces 1 2, Figs. 2 and 3 of the drawings. By thus hinging the end guide-bars either bar may be raised so as to permit of accessibility to the cans in order to remove same in case a damaged can should cause clogging of the line or for any other reason it becomes necessary to handle the cans while being propelled by the endless carrier.

Inasmuch as the tension means for the under-run of the feed-belt consists of a series of hinged weights, said feed-belt will give upward in case of a can becoming jammed, thereby providing against injury to the other cans.

As the cans are carried through the soldering mechanism the solder-applying disks raise the required solder from the solder-baths and deposit a film of solder to the desired surface of the rotating cans. The cans being delivered to the soldering mechanism with their ends heated, less solder is required than where the cans are presented to the solder-applying disks without being heated.

The air and gas for generation of the solder-heating flame is supplied to the burners 39, which extend within fire-boxes 26 26' by the pipes 39' 39<sup>2</sup>. These pipes connect with the pipe 40, to which the burners are connected, which pipe also connects with and supplies the requisite gas mixture to the heating-pipes 19 19'. Suitable valves (not shown) are provided for controlling the supply of air and gas to the burners.

The ends of the cans are fluxed and the heads applied thereto prior to delivering the cans into the machine to be soldered. By the present machine both ends are soldered at the same time, although this is an immaterial feature of the invention.

As the feed-belt is adjustable vertically the distance between the belt and the endless carrier may be readily increased or decreased, so as to regulate the machine for the soldering of cans of different sizes.

The initial heating feature may be omitted, if so desired; but in such case the cans will have to be subjected to the action of the soldering mechanism for a longer time than where

the cans are delivered thereto with their ends heated.

Having thus described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. A can-end-soldering machine comprising a feed-belt, an endless can-carrier, solder-receptacles, devices working therein which raise the solder and apply the same to the ends of the cans as carried past the solder-receptacle by the endless carrier, means for imparting movement to the carrier, and means for driving the feed-belt at a higher speed than the endless carrier whereby the cans are caused to revolve on the endless carrier.

2. A can-end-soldering machine comprising an endless feed-belt, an endless can-carrier arranged below the feed-belt, a series of hinged tension devices for the feed-belt, solder-receptacles, devices working therein which raise the solder and apply the same to the ends of the cans as carried past the solder-receptacle by the endless carrier, and means whereby the feed-belt is driven at a higher rate of speed than the can-carrier whereby the cans are caused to revolve on the endless can-carrier.

3. A can-end-soldering machine consisting of stationary solder-holding receptacles, means for heating the said receptacles, a series of solder-applying disks working within the solder-holding receptacles and by means of which solder is applied to the ends of the cans, an endless carrier which receives the cans and propels the same over the solder-applying disks, and means whereby the cans are caused to revolve on the endless carrier as propelled through the machine.

4. A can-end-soldering machine comprising an endless carrier for the cans, means for imparting movement thereto, solder-holding receptacles, devices working therein which raise the solder and apply the same to the ends of the cans as carried forward by the endless carrier, a feed-belt arranged above the endless carrier and which frictionally engages with the cans, devices whereby vertical adjustment is permitted to be given to the feed-belt, and means whereby said belt is driven at a higher

speed than the carrier so as to cause the cans to rotate on the said carrier as conveyed through the machine.

5. In a can-end-soldering machine, the combination with the endless carrier for the cans, of a feed-belt arranged thereabove, so as to frictionally engage the cans upon the endless carrier, means for driving the endless feed-belt at a higher speed than the endless carrier whereby the cans are caused to revolve in their seats, stationary solder-holding receptacles over which the cans are propelled, and means working therein for applying the solder to the ends of the cans as carried past the solder-receptacle.

6. A can-end-soldering machine comprising soldering means, an endless carrier, for propelling the cans through the machine and in contact with the soldering means, an endless feed-conveyer arranged above the carrier so as to frictionally engage the cans of the carrier, means for driving the feed-conveyer at a higher rate of speed than the carrier so as to cause the cans to rotate as propelled by the carrier, and hinged guide rails or bars for preventing endwise displacement of the cans during travel through the machine.

7. In a can-soldering machine, the combination with a stationary solder-receptacle, of a series of bodily-movable solder-applying rotatable disks therein and means for carrying and rotating the cans over the solder-receptacle in contact with the said solder-applying disks, the bodily movement of the solder-applying disks permitting the same to move only in the path of the rotating cans as they pass.

8. In a can-soldering machine, the combination with a solder-receptacle, solder-applying disks rotatable therein and means for rotating and conveying the cans along and in contact with the rotatable solder-applying disks.

In witness whereof I have hereunto set my hand.

AUGUSTUS LOTZ.

Witnesses:

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D. B. RICHARDS.